We claim:

1. A process for making bioactive glasses comprising:

preparing a reaction sol capable of forming a sol-gel;

aging said reaction mixture;

near equilibrium drying a gel resulting from the reaction mixture, and;

heating the near equilibrium dried gel at a temperature above ambient.

2. The process of Claim 1, further comprising grinding the near equilibrium dried gel.

3. The process of Claim 2, further comprising classifying the ground near equilibrium dried gel to various particle size ranges.

4. The process of Claim 1, said aging conducted at a temperature of at least about 40°C.

5. The process of claim 1, said aging conducted for a duration of at least about 35 hours.

6. The process of Claim 1, said near equilibrium drying conducted at about 60 to 98% humidity.

7. The process of Claim 1, said near equilibrium drying conducted at a temperature of between about 130°C to about 180°C over at least part of the duration of the near equilibrium drying step.

8. The process of Claim 1, said near equilibrium drying conducted at temperatures varied over time between about 130°C to about 180°C.

9. The process of Claim 8, said near equilibrium drying conducted at a temperature ramp with a positive time vs. temperature slope over at least part of the duration of said near equilibrium drying step.

10. The process of Claim 1, the heating step conducted at between about 200°C to about 700°C over at least part of the duration of the heating step.

11. The process of Claim 1, the heating step conducted at temperatures varying over time between 200°C to about 700°C over at least part of the duration of the heating step.

12. The process of Claim 11, the heating step conducted at a temperature ramp with a positive time vs. temperature slope over at least part of the duration of said heating step.

13. The process of Claim 1, the reaction mixture including water, hydrochloric acid, tetraethoxysilane, triethylphosphate, or calcium nitrate, or mixtures thereof.

14. A near equilibrium dried bioactive glass comprising a silicon dioxide based composition prepared by a sol-gel process capable of forming hydroxycarbonate apatite layer when exposed to physiological fluids.

15. The bioactive glass of Claim 14, said glass having an average pore size greater than about 60A° when the silicon dioxide content of the bioactive glass is in the range of about 55 to about 65% by weight.

16. The bioactive glass of Claim 14, said glass having an average pore size greater than 70A° where the silicon dioxide content is in the range of about 65 to about 75% by weight.

17. The bioactive glass of Claim 14, said glass having an average pore size greater than 30A° when the silicon dioxide is in the range of about 75 to about 85% by weight.

18. A near equilibrium dried bioactive glass composition comprising a silicon dioxide based composition having a pore size greater than a corresponding non-near equilibrium-dried bioactive glass.

19. A process for making bioactive glasses by a sol-gel process, the improvement comprising near equilibrium drying a sol-gel.

20. The process of Claim 19, wherein said near equilibrium drying is accomplished at about 60 to 98% humidity.

21. The process of Claim 19, the improvement further comprising near equilibrium drying at a temperature up to about 150°C.

22. The process of Claim 19, the improvement further comprising near equilibrium drying at an initial temperature of less than about 100°C and a final temperature of less than about 150°C.

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23. A near equilibrium-dried bioactive glass comprising, by weight %:

SiO_2	-	40 - 90
CaO	-	4 - 45
Na_2O	-	0 - 20
P_2O_5	-	2 - 10
CaF_2	-	0 - 25
B_2O_3	-	0 - 10

and a surface area greater than the non-near equilibrium-dried bioactive glass having an identical composition.

24. The near equilibrium-dried bioactive glass of Claim 23 wherein said near equilibrium-dried bioactive glass has a surface area of greater than about 175m^2/g and a silicon dioxide content of about 55 to 65% by weight.

25. The near equilibrium-dried bioactive glass of Claim 23, wherein said near equilibrium-dried bioactive glass has a surface area of greater than about 250 m^2/g and a silicon dioxide content of about 65 to 75% by weight.

26. The near equilibrium-dried bioactive glass of Claim 25, wherein said near equilibrium-dried bioactive glass has a surface area of about 300 m^2/g and a silicon dioxide content of about 75 to 85% by weight.

27. A sol-gel process for making a bioactive glass monolith comprising:

preparing a reaction mixture capable of forming a bioactive sol-gel monolith;

casting the reaction mixture into a mold of desired shape;

aging said reaction mixture cast in said mold at a temperature elevated above ambient;

near equilibrium drying the reaction mixture, and;

heating the reaction mixture.

28. The process of Claim 27, wherein the reaction mixture comprises deionized water, hydrochloric acid, nitric acid, tetraethoxysilane, triethylphosphate or calcium nitrate or mixtures thereof.

29. The process of Claim 27, further comprising conducting a pre-aging step before said aging, wherein said pre-aging comprises aging the reaction mixture at ambient temperature.

30. The process of Claim 27, further comprising removing a pore liquor after said aging and before said near equilibrium drying.

31. A near equilibrium-dried sol-gel monolith comprising the product of the process of Claim 27.

32. A method for treating orthopedic defects comprising contacting an orthopedic defect with an defect healing amount of near equilibrium dried sol-gel bioactive glass.

33. A composition for the treatment of orthopedic conditions comprising a bioactive sol gel glass capable of forming an HCA layer within 12 hours of exposure to simulated body fluids.

34. The composition of claim 33, wherein said glass is capable of forming an HCA layer within 5 hours of exposure to simulated body fluids.

35. The composition of claim 33, wherein said glass is capable of forming an HCA layer within 2 hours of exposure to simulated body fluids.

36. The composition of claim 33, wherein said glass is more than 50% resorbed 8 weeks after implantation into a patient.

37. The composition of claim 33, wherein said glass further comprises at least 77% silicon dioxide.